MPL-AL4020-1R5

Low-Resistance Molded Inductor 1.5µH

APPLICATIONS

- Battery-powered devices
- Embedded computing
- High-current SMPS
- High-frequency SMPS
- POL converters
- FPGA

FEATURES

- Size 4.1mmx4.1mmx1.9mm
- Low DCR
- Low AC Losses
- Low Audible Noise
- Molded Construction
- Soft Saturation
- Stable Over High Temperatures
- Max Operating Temp +155°C
- RoHS/REACH-Compliant, Halogen-Free

ELECTRICAL CHARACTERISTICS

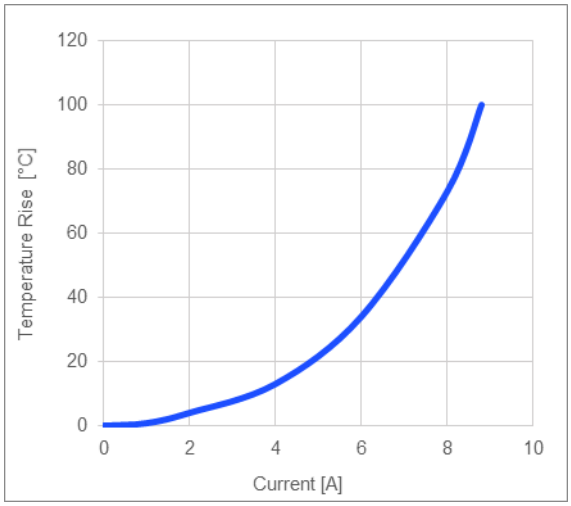
Parameter			Value	Unit
Inductance (1)	L	±20%	1.5	µH
Resistance	R_{DC}	typ	14.5	mΩ
Resistance MAX	$R_{DC\ MAX}$	max	15.9	mΩ
Rated Current (2)	I_R	typ	6.4	A
Saturation Current 25°C (3)	$I_{SAT\ 25°C}$	typ	7.1	A
Saturation Current 100°C (4)	$I_{SAT\ 100°C}$	typ	7.1	A
Resonance Frequency	f_r	typ	53	MHz

GENERAL SPECIFICATIONS

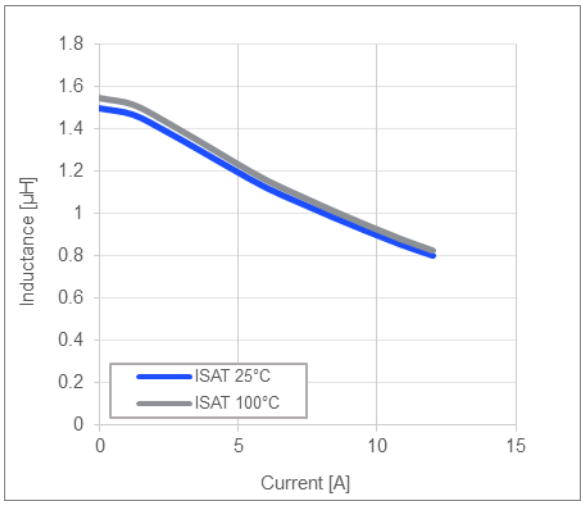
(1) Inductance	Measured at 100kHz, 100mA
(2) Rated Current	Rated current will cause the coil temperature rise ΔT of 40K *I_R measured with the inductor soldered in a single-layer PCB. Copper layer thickness 35µm Cu / PCB size 30x50mm. Temperature behavior dependent on circuit design, PCB layout, proximity to other components, and trace dimensions and thickness.*
(3) Saturation Current 25°C	Saturation current will cause L to drop from 30% at 25°C ambient temperature
(4) Saturation Current 100°C	Saturation current will cause L to drop from 30% at 100°C ambient temperature
Temperature Test Condition	Electrical specifications measured at 25°C, 35% RH if not given differently
Operating Condition	Operating temperature: -40°C to +155°C (including temp rise) Should not exceed +155°C under worst-case operation conditions
Storage Condition	Tape and Reel packaging: -10°C to +40°C Humidity: <50% RH

TYPICAL PERFORMANCE CURVES

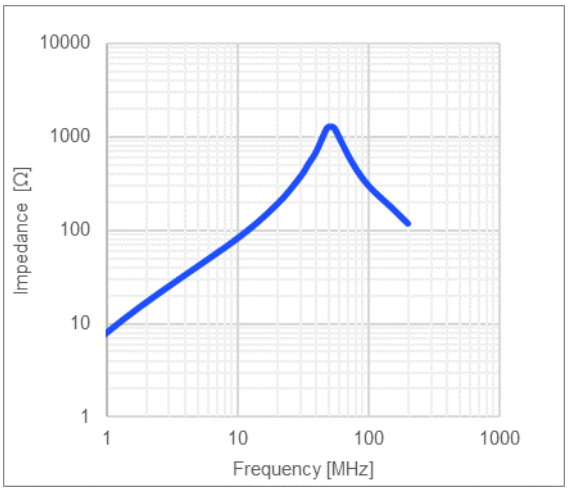
Temperature Rise vs. Current



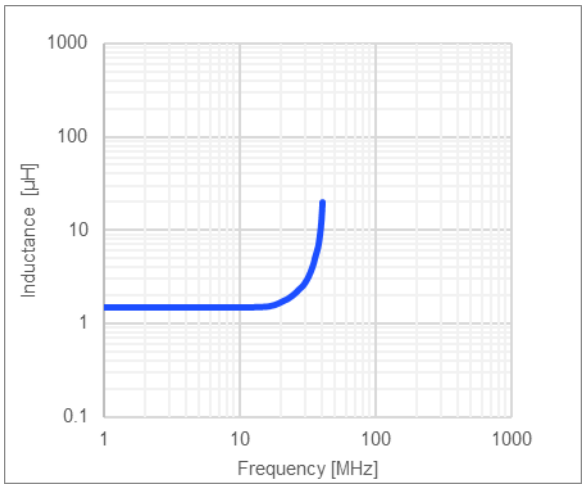
Inductance vs. Current



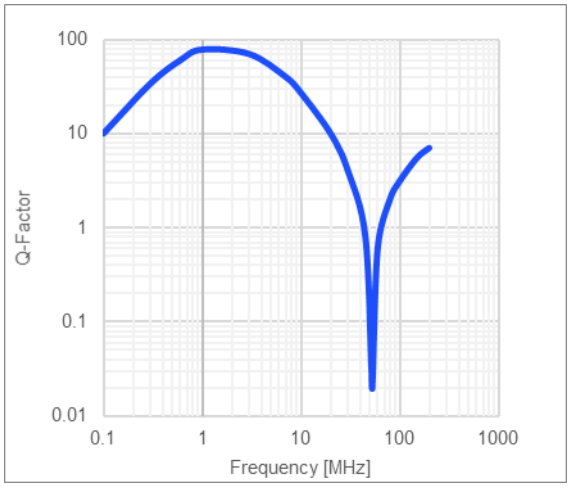
Impedance vs. Frequency



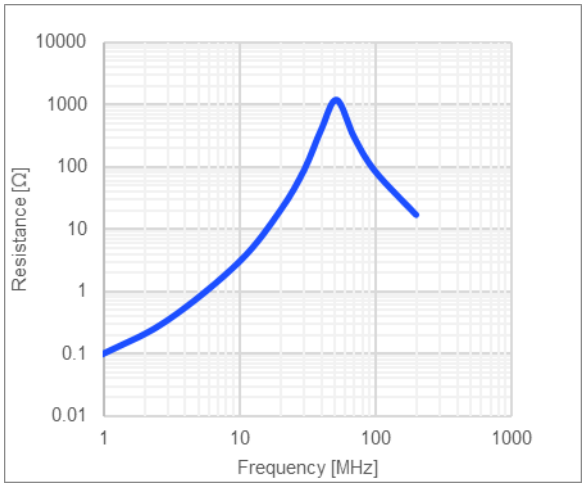
Inductance vs. Frequency



Quality Factor vs. Frequency

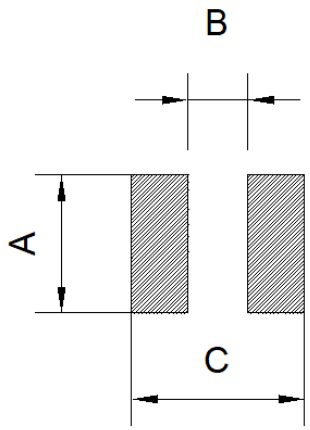


AC Resistance vs. Frequency



LAND PATTERN

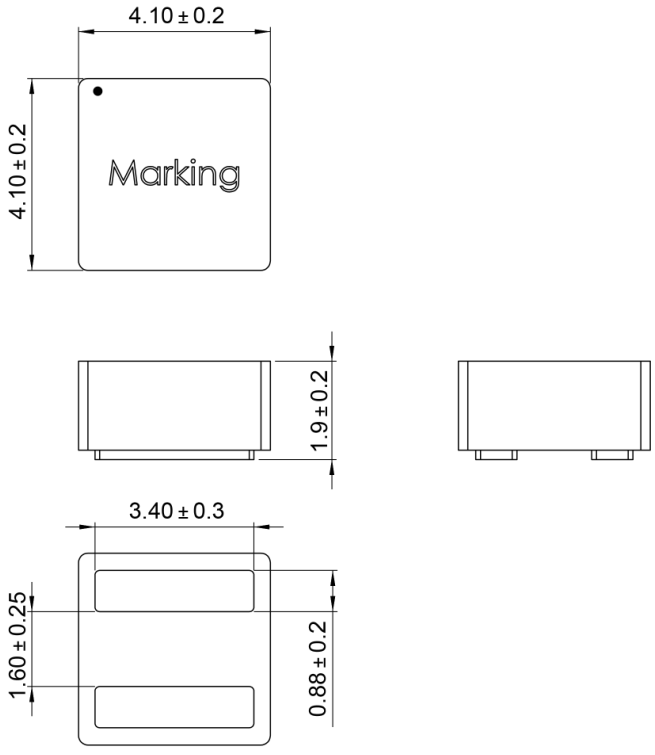
Dimensions	
A	3.80 ref.
B	1.40 ref.
C	3.40 ref.
	(unit in mm)



PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)



TOP MARKING

Marking	
Start of Winding	· (dot)
Inductance Code	1R5
MPS Code	MPS

ORDERING INFORMATION

Part Number	L (1) typ (µH)	R_{DC} typ (mΩ)	I_R (2) typ (A)	$I_{SAT\ 25°C}$ (3) typ (A)	$I_{SAT\ 100°C}$ (4) typ (A)
MPL-AL4020-R47	0.47	6.2	9.2	12.5	12.5
MPL-AL4020-R68	0.68	7.5	8.7	11	11
MPL-AL4020-R82	0.82	9.0	8.4	9.5	9.5
MPL-AL4020-1R0	1.0	10.1	7.9	8.6	8.6
MPL-AL4020-1R2	1.2	12.2	7.4	7.5	7.5
MPL-AL4020-1R5	1.5	14.5	6.4	7.1	7.1
MPL-AL4020-2R2	2.2	21.5	5.5	6.2	6.2
MPL-AL4020-3R3	3.3	34.5	4.4	5.2	5.2
MPL-AL4020-4R7	4.7	52.2	3.65	4.2	4.2

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